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Kinixys (Hinge-Back Tortoise)

Ann Smylie

There are many turtles that have a movable hinge on the plastron, but the Hinge-Back Tortoise (genus - *Kinixys*) is the only living turtle where the hinge has developed across the back of the carapace. This broad band of flexible connective tissue is located between the 4th and 5th costals and the 7th and 8th peripherals in adults.

Hatchlings of this African tortoise are flattened with serrated marginals. The hinge begins to develop when they are one year old.

This movable hinge provides protection by closing off the tortoise's hind legs and tail and it may also assist in egg laying and respiration.

Hinge-Backs have legs that are not as club shaped as other Testudinidae. They are long and slender giving the tortoise an unusual gait when it walks. Hinge-Backs are all omnivorous and their tails end in a claw like tubercle. Males have longer, thicker tails than the females and they have concave plastrons. Hinge-Back Tortoises have relatively long skulls, a hooked upper jaw and four or five claws on each forefoot.

Different species of Hinge-Back Tortoises are found in Africa. Two of these - *Kinixys Homeana* and *Kinixys*

Erosa, are similar and are found in the same areas, in west and central Africa. Both are forest dwellers, with *Kinixys Erosa* preferring a more moist environment. It is often found in marshes and on river banks and is a fair swimmer. They both have solid dark brown to tan shells, some with yellow markings.

Kinixys Erosa has thick paired gulars that extend beyond the carapace rim and it is also the largest species of the genus, often reaching a carapace length of 13 inches.

Both *Kinixys Erosa* and *Kinixys Homeana* have a carapace with flared marginals.

The most distinctive feature of *Kinixys Homeana* is the back of the carapace which drops off abruptly, seeming to be cut off. This has earned it the German name of "clipped tortoise".

Kinixys Belliana (Bell's Hinge-Back Tortoise) is the most widely distributed and best known of the species of Hinge-Backs. It prefers the dry savannas and grasslands that skirt Africa's rainforests, where there are distinct wet and dry seasons. They become active with the onset of rains and probably lay eggs at this time. During dry periods it estivates in the muddy bottoms of drying water holes. This Hinge-Back's carapace is domed with a flat dorsal surface and sloping sides. It's anterior and posterior marginals are not flared. The center of each

carapacial scute is yellow to reddish brown, surrounded by dark brown or black. The plastron is yellow with black radiation. Its head is brown, black, yellow or tan and the limbs and tail are grayish brown.

Four subspecies of *Kinixys Belliana* are recognized:

Kinixys Belliana Belliana is found in eastern Africa from Somalia to South Africa. *Kinixys Belliana Spekii* lives in southern and central Africa and *Kinixys Belliana Mertensi* lives in northern Zaire and Uganda. *Kinixys Belliana Nogueyi* is found in west Africa and unlike the other 3 sub-species who have 5 claws on each forefoot, it has only 4.

Little is known of the small Hinge-Back *Kinixys Natalensis* (Natal Hinge-Back Tortoise). It inhabits dry scrubby slopes and grasslands from Mozambique, south through South Africa. Its carapace is slightly domed with a flat dorsal surface and sloping sides. The posterior and anterior marginals are not flared. Its carapacial scutes have yellow to orange centers surrounded by dark brown or black. The plastron scutes have yellow centers and seam borders surrounded by black or brown and the head, tail and limbs are brown to yellow.

Selecting Aquarium Heaters

Marlaina Barr and Bob Smither

Turtles should not be housed in aquariums or containers of similar nature under normal circumstances. As responsible turtle keepers, we should always strive to maintain them in as natural an environment as possible. Turtles will not thrive in

an aquarium, they need to be outdoors.

There are circumstances where it may be necessary to keep a turtle in an aquarium. These circumstances include over-wintering a sick turtle or one acquired late in the year and over-wintering exotic species that do not hibernate in their natural range. When turtles are kept in an aquarium, an aquarium heater will be required in order to maintain the turtle at a satisfactory temperature. Note that room temperature is too warm for the turtle to hibernate but may be too cold for it to properly digest its food and to maintain its health.

It is important to buy the right heater for your aquarium. There are two basic types - those designed to hang from the side with the top of the heater out of the water and those that can be totally submerged. With either type, it is important that the heater element end of the heater be completely surrounded by water - if not, the heat from the element will likely break the glass. Most turtle setups will not have the water up to the top of the aquarium since there will be basking areas, so the hanging types will not work properly. Even if the heater element is submerged, the thermostat portion (near the top of the glass tube) will not be surrounded by water and will not be able to regulate the water temperature. For turtles, the totally submerged types are recommended. They can be oriented horizontally and therefore completely surrounded by water even in tanks with only a few inches of water.

Note that the use of a glass heater can be dangerous. If the glass

breaks, both you and your turtle may be electrocuted. Turtles can be vigorous - be sure to protect the heater from the turtle. A good solution is to bury the heater (it must be the submersible type) in the gravel over an under-gravel filter. The operation of the under-gravel filter will circulate water around the heater. If there is not enough gravel to protect the heater, consider surrounding it with bricks or stones. Some brands have a heater guard that fits around the glass tube and provides some protection.

There are several brands of heaters available. The Ebo Jager heater is considered to be among the best. It is completely submersible, has an adjustable temperature setting knob (although it is difficult to adjust since it is surrounded by the water seal), and uses high quality, shock resistant glass. This last feature is very important - cheap heaters using thin glass tubes will not withstand the onslaught of a vigorous turtle. The Ebo Jager has its temperature setting indicated on the adjustment knob, but you should always check the temperature with a high quality aquarium thermometer, at least until you get the setting correct. Hagen has the Hagen Tronic series that also can be recommended. This series has an electronic temperature control which should be more reliable than the normal bi-metallic strip control mechanism.

When selecting a heater for your setup, do not buy more power than you need. If the heater is too powerful for the size of the aquarium, the heater will cycle more often and will wear out sooner. It is possible, if unlikely, for the heater to fail where it is on

continuously. The better heaters have a safety feature that will prevent overheating should the main thermostat fail. You should look for this feature in any heater that you buy.

To make it simple, get an adjustable, fully submersible heater that is the right wattage for the tank. Use a good thermometer to check the water temperature. A good rule of thumb is to use a heater with 4 to 5 Watts per gallon of aquarium size for small tanks and 3 to 4 Watts per gallon for larger tanks. Note that even if the aquarium is not filled, you should select a heater based on the aquarium size since most heat loss is through the top water surface. If you keep your house cool, you should size the heater using the higher wattage number.

Heaters are usually available in 25 Watt steps from 50 to 150 Watts and in 50 Watt steps for large heaters. Using the above rule as a guide you can determine the size of heater for your tank. For example:

<i>Aquari- um Size</i>	<i>warm house</i>	<i>cool house</i>
10 gal	50 W	50 W
15 gal	75 W	75 W
20 gal	75 W	100 W
30 gal	100 W	150 W
40 gal	150 W	175 W
55 gal	175 W	250 W
65 gal	200 W	250 W
75 gal	250 W	300 W

<i>Aquarium Size</i>	<i>warm house</i>	<i>cool house</i>
100 gal	300 W	400 W

If necessary, you can use two heaters whose wattages total the required power. For example, two 150 Watt heaters can be substituted for a single 300 Watt heater. The two heaters should be adjusted as closely as possible to the same setting. They should be located at opposite ends of the aquarium. The adjustment is correct when both heaters cycle about the same amount.

Turtle setups will normally include a basking area with a lamp. The lamp will provide some heating to the aquarium, but this should not be considered when selecting the heater. The heater should be sized to maintain the desired temperature when the lights are off at night. Note that the turtle must be able to get away from the light source as well to prevent being burned.

Healthy natives should be maintained at about 80F to 82F. If a turtle is sick, it may benefit from higher temperatures such as 88F. When housing exotics, our goal should be to approximate the temperature that the species would experience in their natural environment.

Releasing Box Turtles

Paul Hensarling

People trying to reintroduce box turtles in a particular environment should not be quick to just think that those turtles will prosper

individually or stay to create new populations. These reintroductions of turtles into new environments have often been met with the failure of the majority of those turtles to establish new personal territories within the bounds of those environments.

The McKeever Environmental Learning Center in Pennsylvania has spent over \$2,000 per turtle to try to reintroduce box turtles into new environment space on the center's site, which included human intervention via radio telemetry. Even with such intervention, only half of those turtles lived, and it will take perhaps half a century to even know whether those turtles that were able to adapt to their new living spaces will thrive to the point of creating new populations of turtles.

Box turtles that are moved even a short distance, even a half-mile, will often not attempt to establish their personal home territories within the new environments. Adaptation by the turtles of these new environments is often met with survival challenges, which results in an abnormally high mortality rate. Those that do survive in the short term are typically ill at ease in their new introduced environments and will usually wander about aimlessly and finally abandon the area completely.

News from the Humane Society of the United States

A Reptile's Place Is in the Wild, Not in the Home

December 22, 1999

The Problem with the Pet Reptile Trade

Business is booming for the pet reptile industry. The estimated number of pet reptiles in the United States is over 7 million divided between over 3 million households. Each year the U.S. pet industry imports 2 million reptiles and collects from the wild in the United States or breeds in captivity countless more. An increasing number of these reptiles are ending up in animal shelters because their owners either tire of them or cannot take care of them. Shelters, already over-burdened with millions of unwanted dogs and cats, now must deal with this new pet industry-generated problem.

Reptiles-particularly wild-caught ones, who make up a large part of the trade-often do not survive long in captivity. Many die within a year of purchase. Wild-caught reptiles are mistreated from the time of capture. They are usually not given food or water for many weeks; they are held in containers that do not provide adequate space, ventilation, or protection from heat or cold; and they are transported to market under crowded, unsanitary, inhumane conditions. Reptiles often arrive at pet stores emaciated, dehydrated, wounded, and infected with parasites.

Destruction in the Wild

The pet trade has been a disaster for many wild reptile populations. Trade has destroyed wild populations of island reptiles such as the prehensile-tailed skink from

the Solomon Islands and the Parson's chameleon from Madagascar. Americas bog turtles are highly prized by reptile collectors, who reduced their wild populations to such an extent that the species now is protected under the Endangered Species Act.

And then there is the habitat degradation. The methods used to collect the reptiles destroy natural denning sites used by a wide variety of animals and often include introducing toxic chemicals (such as gasoline) into the environment as a means of flushing reptiles out of hiding places.

Dumping Unwanted Reptiles

Captive reptiles are often released into the wild by well-meaning people who can no longer provide care. These reptiles then become established in the wild, where they compete with native wildlife and can also transmit parasites and diseases to reptiles and other animals, including cattle. The HSUS urges owners who no longer want their reptile pets never to release them into the wild or to attempt to euthanize them. They should seek the advice and assistance of a local shelter, local humane agency, or qualified veterinarian.

ADs

Leopard Tortoises

... for sale - captive born hatchlings - yearlings. \$100 -\$125. Contact Russ at 936-594-5554 or russcarol@lcc.net

Hingeback Tortoises

I want to buy 1 or 2 female forest hingeback tortoises, Kinixys homeana, to keep our lonesome male company. Contact Dorthea at (979) 696-8484, 979-693-5059, FAX: 979-764-1133, or mickthea@txcyber.com

Cheryl Comer is looking for Forest Hinge-Backs (Kinixys Erosa) Tortoises. She needs females especially, but would like more males as well. If you see, or have any for sale or adoption, Please contact her at 281-236-9786. She has had one for a year and another for 8 months and both are doing well. She is also interested in speaking with other Kinixys owners.

GCTTS Meeting - March 24, 2002

Our next meeting will be held at the Houston Arboretum, Sunday, March 24, 2002. Dr. Larry White will be talking from 2PM to 4PM as part of the Arboretum Urban Nature Series. Dr. White's talk is free and open to the public. Immediately following Dr. White's talk there will be a GCTTS membership meeting. Hope to see you there!